THE CENTRAL FLORIDA TECHNOLOGY DEVELOPMENT CENTER

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Introduction

The Central Florida Technology Development Center (CFTDC) is a state-of-the-art modeling and simulation (M&S) research and development (R&D) facility at the Central Florida Research Park. Established in March 2001, the CFTDC is home to the Army's Center of Excellence for Modeling and Simulation. The CFTDC is a partnership linking the U.S. Army Simulation, Training and Instrumentation Command (STRICOM); the Army Research Institute (ARI); and the University of Central Florida Institute for Simulation and Training (UCF/IST). The CFTDC is also home to STRICOM's technology base business area. More than 80 individuals from STRICOM, ARI, UCF/IST, and industry, as well as UCF students, work in the facility. A highly successful and expanding partnership exists between CFTDC and the state of Florida and UCF/IST. The center includes more than 27,000 square feet of office, laboratory, and test bed/experimentation space, and houses 18 testbeds, a simulation theater, simulation tools and equipment, and a network infrastructure. As the Army's tool for exploring, developing, and transferring M&S technologies to military and civilian applications, the CFTDC is also used for developing partnerships with industry, academia, and other government agencies. The CFTDC welcomes visitors from around the world to view its M&S capabilities.

Multimedia Capabilities

The CFTDC is a fully networked multimedia facility with extensive data, video, and audio capabilities. More than 60 miles of cable for data, voice, and multimedia applications were used in the facility's construction. Communication to the outside world is aided through more than 600 network data ports, more than 200 voice ports throughout the facility, and multiple wide area networks including the Defense Research and Engineering Network (DREN), the UCF Research Network, and the STRICOM Corporate Network.

The CFTDC contains a simulation theater that accommodates more than 30 individuals for a completely immersive experience. Additionally, the Innovation Center in the CFTDC contains a complete multimedia suite with a real-time video teleconferencing capability. The center's 18 testbeds are interoperable and cover live, virtual, and constructive simulation technologies. Testbeds can also be reconfigured to accommodate the ever-changing requirements for this state-of-the-art M&S facility. In addition to the DREN, the CFTDC will soon have additional capabilities for wide area networks that encompass the National Guard's GuardNet and the Internet II, both via UCF.

Homeland Defense

CFTDC supports homeland defense by providing R&D in medical simulation and individual virtual environment technologies (IVET). Medical simulation technologies are designed to allow civilian and military personnel to achieve the skill level necessary to save lives on the battlefield and in the United States. For example, the Combat Trauma Patient Simulation System (CTPS) can simulate combat casualty care from the initial point of injury, through assessment, triage, initial treatment, and evacuation, all the way to hospital-level care.

CTPS is used for initial, refresher, and sustainment training of individual medics and medical teams. Furthermore, CTPS provides a means for mission rehearsal, test and evaluation, and after-action review for the collective tasks of medical operations involving weapons of mass destruction incidents.

The goal of IVET is to develop immersion technologies that make a combatant's experience more realistic. These technologies focus on training small-unit leaders (team, squad, or platoon leaders) in specific tactics, techniques, and procedures. Another application involves training first responders, the personnel that deal with weapons of mass destruction incidents (nuclear, biological, and chemical), through the Virtual Emergency Response Training System.

Experimentation

The CFTDC also provides a means by which Objective Force experimentation applies M&S technology to develop and evaluate new Army concepts, including those of the Future Combat Systems and the Objective Force. The DREN is currently used in the CFTDC for experiments and integration with the Research Development and Engineering Center Federations, the Joint Virtual Battlespace Program, and for experiments with the Battle Labs at Fort Knox, KY, and Fort Rucker, AL. Other recent efforts include M&S experimentation in support of the Integrated Situational Awareness and Targeting Advanced Technology Demonstration and the Bradley Integrated Army Active Protection System. In the future, the DREN will also be used for experimenting with and testing other programs such as the Advanced Robotics Semi-Automated

Forces Program, the Immersive Technologies Program, and the Embedded Simulation and Training Technologies Program.

Distributed Simulations

The CFTDC is a distributed M&S tool. Distributed simulation technologies enable the interoperation and reuse of current and future simulations, components, and tools. The Modular Interoperable Synthetic Environment (ModISE), a prototyped open and extensible architecture that focuses on interoperability, compatibility, and drag-and-drop simulation composition done dynamically over the Web, is an example of efforts in this area in the CFTDC. The ModISE API (application programming interface) supports a subset of the IEEE (Institute of Electrical and Electronics Engineers) 1516 High Level Architecture specification. This program supports DOD's vision of constructing M&S environments from affordable, reusable components that interoperate through open systems architectures to maximize utility and flexibility. This program also supports the establishment of standards and protocols that promote Web-based data exchange, open system architecture, and software reusability of M&S applications.

Distributed Learning

The CFTDC supports advanced distributed learning (ADL) through a multiyear Army Science and Technology Objective (STO) program (one of many STO/ATD (advanced technology demonstration) programs at STRICOM). In partnership with ARI, the ADL research and development program supports the Army Distance Learning Program (TADLP) by researching collaborative Web-based training and simulation solutions to provide true "anytime, anywhere" training to the soldier. The TADLP will introduce an Intelligent Tutoring System. TADLP's goal is to provide a truly instructorless automated training environment by monitoring student's planning and execution. Using case-based reasoning, the Intelligent Tutoring System will be used to compare student performance to subject matter expert performance in the same scenario. Based on the soldier's performance, remedial coursework and similar scenarios may be assigned to ensure their understanding of Army doctrine.

Community Efforts

The CFTDC is a learning center for M&S, an R&D center, and a technology incubator for industry, academia, and government agencies. While co-hosting the 39th National Junior Science and Humanities Symposium (JSHS), the CFTDC welcomed to central Florida more than 240 of the best and the brightest high school students from across the country. The theme was "Discovering New Frontiers: Virtual Exploration of Science and Technology." The CFTDC is also a partner in the National JSHS Program, which is a tri-Service sponsored effort aimed at encouraging and recognizing the next generation of scientific talent.

Following the successful educational outreach support of the 39th National JSHS Symposium, STRICOM's Commanding General BG Stephen Seay directed the development of a Central Florida high-tech outreach initiative that would link academia, industry, and government in a Web-centered network. By using knowledge-management software and by tapping expertise in the Central Florida Research Park and adjoining UCF, all three sectors work toward launching a network that will create a dynamic interface between the educators, industry partners, and government agencies. Schools and scholars will have a user-friendly tool that gives them access to the more than 3,800 high-tech firms in central Florida. Corporate partners in the high-tech sector will achieve a reliable and efficient path to coordinate their educational outreach. Central Florida government and public service entities, including the Florida High Tech Corridor Council and area economic development commissions, will have a vehicle to accelerate development of an internationally competitive workforce.

Conclusion

The CFTDC involves a unique partnership among STRICOM, ARI, and UCF/IST and is a means to achieve training, analysis, and acquisition goals at STRICOM. The CFTDC not only supports development of the Army's critical training technology, but it also provides a nexus for partnering and transitioning dual-use technologies to local government, industry, and academia. Additionally, the CFTDC provides a learning environment for engineers and students as well as an infrastructure for R&D of simulation and training technology for the Army's Objective Force. STRICOM has cooperative agreements for technology development in the areas of embedded simulation, advanced robotics, medical simulation, immersive simulations, synthetic natural environments, and advanced distributed learning tools. The CFTDC is truly the wave of the future in M&S facilities.

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